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SEQUENCE LISTING

<110> The Walter and Eliza Hall Institute of Medical Research

<120> Pancreatic islet cell growth factors

<130> 2379014/EJH

<150> US 60/183573

<151> 2000-02-18

<160> 30

<170> PatentIn version 3.0

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tta	tgc	caa	gtc	ctg	cta	gga	ggc	gcg	agc	cat	gct	agt	ttg	ata	cct	96
Leu	Cys	Gln	Val	Leu	Leu	Gly	Gly	Ala	Ser	His	Ala	Ser	Leu	Ile	Pro	
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gag	acc	ggg	aag	aaa	aaa	gtc	gcc	gag	att	cag	ggc	cac	gcg	gga	gga	144
Glu	Thr	Gly	Lys	Lys	Lys	Val	Ala	Glu	Ile	Gln	Gly	His	Ala	Gly	Gly	
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Leu Leu Gln Met Phe Gly Leu Arg Arg Arg Pro Gln Pro Ser Lys Ser	
65 70 75 80	
gcc gtc att ccg gat tac atg agg gat ctt tac cgg ctc cag tct ggg	288
Ala Val Ile Pro Asp Tyr Met Arg Asp Leu Tyr Arg Leu Gln Ser Gly	
85 90 95	
gag gag gag gag gaa gag cag agc cag gga acc ggg ctt gag tac ccg	336
Glu Glu Glu Glu Glu Glu Gln Ser Gln Gly Thr Gly Leu Glu Tyr Pro	
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Glu Arg Pro Ala Ser Arg Ala Asn Thr Val Arg Ser Phe His His Glu	
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Glu His Leu Glu Asn Ile Pro Gly Thr Ser Glu Ser Ser Ala Phe Arg	
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145 150 155 160	
gca gag ctc cgg ctc ttt cgg gag cag gtg gac cag ggc cct gac tgg	528
Ala Glu Leu Arg Leu Phe Arg Glu Gln Val Asp Gln Gly Pro Asp Trp	
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Glu Gln Gly Phe His Arg Ile Asn Ile Xaa Glu Val Met Lys Pro Pro	
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gca gaa atg gtt cct gga cac ctc atc aca cga cta ctg gac acc aga	624

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Ala Val Leu Arg Trp Thr Arg Glu Lys Gln Pro Asn Tyr Gly Leu Ala	
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Ile Glu Val Thr His Leu His Gln Thr Arg Thr His Gln Gly Gln His	
	245 250 255
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Val Arg Ile Ser Arg Ser Leu Pro Gln Gly Ser Gly Asp Trp Ala Gln	
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Leu Arg Pro Leu Leu Val Thr Phe Gly His Asp Gly Arg Gly His Thr	
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Leu Thr Arg Arg Arg Ala Lys Arg Ser Pro Lys Thr Arg Gln Glu Glu	
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Glu Tyr Met Pro Met Glu Thr Arg Arg Lys Lys Asn Lys Asn Cys Arg	
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cgc cat tca cta tac gtg gac ttc agt gac gtg ggc tgg aat gat tgg	1008
Arg His Ser Leu Tyr Val Asp Phe Ser Asp Val Gly Trp Asn Asp Trp	
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 Gln Thr Leu Val Asn Ser Val Asn Ser Ser Ile Pro Lys Ala Cys Cys
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Arg Arg Ser Gly Gln Ser His Glu Leu Leu Arg Asp Phe Glu Ala Thr
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Glu His Leu Glu Asn Ile Pro Gly Thr Ser Glu Ser Ser Ala Phe Arg
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Ala Glu Leu Arg Leu Phe Arg Glu Gln Val Asp Gln Gly Pro Asp Trp
 165 170 175

Glu Gln Gly Phe His Arg Ile Asn Ile Xaa Glu Val Met Lys Pro Pro
 180 185 190

Ala Glu Met Val Pro Gly His Leu Ile Thr Arg Leu Leu Asp Thr Arg
 195 200 205

Leu Val His His Asn Val Thr Arg Trp Glu Thr Phe Asp Val Ser Pro
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Ala Val Leu Arg Trp Thr Arg Glu Lys Gln Pro Asn Tyr Gly Leu Ala
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Ile Glu Val Thr His Leu His Gln Thr Arg Thr His Gln Gly Gln His
 245 250 255

Val Arg Ile Ser Arg Ser Leu Pro Gln Gly Ser Gly Asp Trp Ala Gln

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Arg His Ser Leu Tyr Val Asp Phe Ser Asp Val Gly Trp Asn Asp Trp		
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Ile Val Ala Pro Pro Gly Tyr Gln Ala Phe Tyr Cys His Gly Asp Cys		
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Gln Thr Leu Val Asn Ser Val Asn Ser Ser Ile Pro Lys Ala Cys Cys		
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Glu Thr Gly Lys Lys Lys Val Ala Glu Ile Gln Gly His Ala Gly Gly	
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cgc cgc tca ggg cag agc cat gag ctc ctg cgg gac ttc gag gcg aca	192
Arg Arg Ser Gly Gln Ser His Glu Leu Leu Arg Asp Phe Glu Ala Thr	
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Leu Leu Gln Met Phe Gly Leu Arg Arg Arg Pro Gln Pro Ser Lys Ser	
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gcc gtc att ccg gat tac atg agg gat ctt tac cgg ctc cag tct ggg	288
Ala Val Ile Pro Asp Tyr Met Arg Asp Leu Tyr Arg Leu Gln Ser Gly	
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Glu Glu Glu Glu Glu Glu Gln Ser Gln Gly Thr Gly Leu Glu Tyr Pro	
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Glu Arg Pro Ala Ser Arg Ala Asn Thr Val Arg Ser Phe His His Glu	
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145	150 155 160
gca gag ctc cgg ctc ttt cgg gag cag gtg gac cag ggc cct gac tgg	528
Ala Glu Leu Arg Leu Phe Arg Glu Gln Val Asp Gln Gly Pro Asp Trp	
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gaa cag ggc ttc cac cgt ata aac att yat gag gtt atg aag ccc cca	576
Glu Gln Gly Phe His Arg Ile Asn Ile Xaa Glu Val Met Lys Pro Pro	
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gca gaa atg gtt cct gga cac ctc atc aca cga cta ctg gac acc aga	624
Ala Glu Met Val Pro Gly His Leu Ile Thr Arg Leu Leu Asp Thr Arg	
	195 200 205
cta gtc cat cac aat gtg aca cgg tgg gaa act ttc gat gtg agc cct	672
Leu Val His His Asn Val Thr Arg Trp Glu Thr Phe Asp Val Ser Pro	
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Ala Val Leu Arg Trp Thr Arg Glu Lys Gln Pro Asn Tyr Gly Leu Ala	
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Ile Glu Val Thr His Leu His Gln Thr Arg Thr His Gln Gly Gln His	
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gtc aga atc agc cga tcg tta cct caa ggg agt gga gat tgg gcc caa	816
Val Arg Ile Ser Arg Ser Leu Pro Gln Gly Ser Gly Asp Trp Ala Gln	
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ctc cgg ccc ctc ctg gtc act ttt ggc cat gat ggc cgg ggc cat acc	864
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Glu Tyr Met Pro Met Glu Thr Arg Thr Gln Ser Gln Asp Val Ser Arg	
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 ggc tcc ggt tct tca gac tac aac ggc agt gag tta aaa aca gct tgc	1008
Gly Ser Gly Ser Ser Asp Tyr Asn Gly Ser Glu Leu Lys Thr Ala Cys	
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 aag aag cat gag ctc tat gtg agc ttc cag gac ctg gga tgg cag gac	1056
Lys Lys His Glu Leu Tyr Val Ser Phe Gln Asp Leu Gly Trp Gln Asp	
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Trp Ile Ile Ala Pro Lys Gly Tyr Ala Ala Asn Tyr Cys Asp Gly Glu	
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Val Gln Thr Leu Val His Leu Met Asn Pro Glu Tyr Val Pro Lys Pro	
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Cys Cys Ala Pro Thr Lys Leu Asn Ala Ile Ser Val Leu Tyr Phe Asp	
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 gat aac tcc aat gtc atc ttg aaa aag tac agg aat atg gtc gtg aga	1296
Asp Asn Ser Asn Val Ile Leu Lys Lys Tyr Arg Asn Met Val Val Arg	
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30

Glu Thr Gly Lys Lys Lys Val Ala Glu Ile Gln Gly His Ala Gly Gly

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Arg Arg Ser Gly Gln Ser His Glu Leu Leu Arg Asp Phe Glu Ala Thr

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Leu Leu Gln Met Phe Gly Leu Arg Arg Arg Pro Gln Pro Ser Lys Ser

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Ala Val Ile Pro Asp Tyr Met Arg Asp Leu Tyr Arg Leu Gln Ser Gly

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Glu Glu Glu Glu Glu Glu Gln Ser Gln Gly Thr Gly Leu Glu Tyr Pro

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Glu Arg Pro Ala Ser Arg Ala Asn Thr Val Arg Ser Phe His His Glu

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Ala Glu Leu Arg Leu Phe Arg Glu Gln Val Asp Gln Gly Pro Asp Trp
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Glu Gln Gly Phe His Arg Ile Asn Ile Xaa Glu Val Met Lys Pro Pro
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Ala Glu Met Val Pro Gly His Leu Ile Thr Arg Leu Leu Asp Thr Arg
 195 200 205

Leu Val His His Asn Val Thr Arg Trp Glu Thr Phe Asp Val Ser Pro
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Ala Val Leu Arg Trp Thr Arg Glu Lys Gln Pro Asn Tyr Gly Leu Ala
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Ile Glu Val Thr His Leu His Gln Thr Arg Thr His Gln Gly Gln His
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Val Arg Ile Ser Arg Ser Leu Pro Gln Gly Ser Gly Asp Trp Ala Gln
 260 265 270

Leu Arg Pro Leu Leu Val Thr Phe Gly His Asp Gly Arg Gly His Thr
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Leu Thr Arg Arg Arg Ala Lys Arg Ser Pro Lys Thr Arg Gln Glu Glu
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Glu Tyr Met Pro Met Glu Thr Arg Thr Gln Ser Gln Asp Val Ser Arg
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Gly Ser Gly Ser Ser Asp Tyr Asn Gly Ser Glu Leu Lys Thr Ala Cys
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Lys Lys His Glu Leu Tyr Val Ser Phe Gln Asp Leu Gly Trp Gln Asp
 340 345 350

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Trp Ile Ile Ala Pro Lys Gly Tyr Ala Ala Asn Tyr Cys Asp Gly Glu
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Cys Ser Phe Pro Leu Asn Ala His Met Asn Ala Thr Asn His Ala Ile
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Val Gln Thr Leu Val His Leu Met Asn Pro Glu Tyr Val Pro Lys Pro
 385 390 395 400

Cys Cys Ala Pro Thr Lys Leu Asn Ala Ile Ser Val Leu Tyr Phe Asp
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- 13 -

Glu Thr Gly Lys Lys Lys Val Ala Glu Ile Gln Gly His Ala Gly Gly	
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Arg Arg Ser Gly Gln Ser His Glu Leu Leu Arg Asp Phe Glu Ala Thr	
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Ala Val Ile Pro Asp Tyr Met Arg Asp Leu Tyr Arg Leu Gln Ser Gly	
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Glu Glu Glu Glu Glu Glu Gln Ser Gln Gly Thr Gly Leu Glu Tyr Pro	
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Glu Arg Pro Ala Ser Arg Ala Asn Thr Val Arg Ser Phe His His Glu	
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Glu His Leu Glu Asn Ile Pro Gly Thr Ser Glu Ser Ser Ala Phe Arg	
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Ala Glu Leu Arg Leu Phe Arg Glu Gln Val Asp Gln Gly Pro Asp Trp	
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Glu Gln Gly Phe His Arg Ile Asn Ile Xaa Glu Val Met Lys Pro Pro	
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Leu Val His His Asn Val Thr Arg Trp Glu Thr Phe Asp Val Ser Pro	
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Ile Glu Val Thr His Leu His Gln Thr Arg Thr His Gln Gly Gln His	
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Val Arg Ile Ser Arg Ser Leu Pro Gln Gly Ser Gly Asp Trp Ala Gln	
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Ser Thr Arg Gln Glu Gln Lys Leu Ile Ser Glu Glu Asp Leu Thr Arg	
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Arg Lys Lys Asn Lys Asn Cys Arg Arg His Ser Leu Tyr Val Asp Phe	
325 330 335	
agt gac gtg ggc tgg aat gat tgg att gtg gcc cca ccc ggc tac cag	1056

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Ser Asp Val Gly Trp Asn Asp Trp Ile Val Ala Pro Pro Gly Tyr Gln
 340 345 350

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 Ala Phe Tyr Cys His Gly Asp Cys Pro Phe Pro Leu Ala Asp His Leu
 355 360 365

aac tca acc aac cat gcc att gtg cag acc cta gtc aac tct gtt aat 1152
 Asn Ser Thr Asn His Ala Ile Val Gln Thr Leu Val Asn Ser Val Asn
 370 375 380

tct agt atc cct aag gcc tgt tgt gtc ccc act gaa ctg agt gcc att 1200
 Ser Ser Ile Pro Lys Ala Cys Cys Val Pro Thr Glu Leu Ser Ala Ile
 385 390 395 400

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 Ser Met Leu Tyr Leu Asp Glu Tyr Asp Lys Val Val Leu Lys Asn Tyr
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 35 40 45

- 16 -

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Leu Leu Gln Met Phe Gly Leu Arg Arg Arg Pro Gln Pro Ser Lys Ser
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Glu His Leu Glu Asn Ile Pro Gly Thr Ser Glu Ser Ser Ala Phe Arg
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Ala Glu Leu Arg Leu Phe Arg Glu Gln Val Asp Gln Gly Pro Asp Trp
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Ala Glu Met Val Pro Gly His Leu Ile Thr Arg Leu Leu Asp Thr Arg
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Leu Val His His Asn Val Thr Arg Trp Glu Thr Phe Asp Val Ser Pro
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Ala Val Leu Arg Trp Thr Arg Glu Lys Gln Pro Asn Tyr Gly Leu Ala
 225 230 235 240

Ile Glu Val Thr His Leu His Gln Thr Arg Thr His Gln Gly Gln His
 245 250 255

- 17 -

Val Arg Ile Ser Arg Ser Leu Pro Gln Gly Ser Gly Asp Trp Ala Gln

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265

270

Leu Arg Pro Leu Leu Val Thr Phe Gly His Asp Gly Arg Gly His Thr

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285

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320

Arg Lys Lys Asn Lys Asn Cys Arg Arg His Ser Leu Tyr Val Asp Phe

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Ser Asp Val Gly Trp Asn Asp Trp Ile Val Ala Pro Pro Gly Tyr Gln

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 Leu Asp Asn Glu Val His Ser Ser Phe Ile His Arg Arg Leu Arg Ser
 35 40 45

cag gag cgg cgg gag atg cag cgg gag atc ctg tcc atc tta ggg ttg 192
 Gln Glu Arg Arg Glu Met Gln Arg Glu Ile Leu Ser Ile Leu Gly Leu
 50 55 60

ccc cat cgc ccg cgc ccg cac ctc cag gga aag cat aat tcg gcg ccc 240
 Pro His Arg Pro Arg Pro His Leu Gln Gly Lys His Asn Ser Ala Pro
 65 70 75 80

atg ttc atg ttg gac ctg tac aac gcc atg gcg gtg gag gag agc ggg 288
 Met Phe Met Leu Asp Leu Tyr Asn Ala Met Ala Val Glu Glu Ser Gly
 85 90 95

ccg gac gga cag gcc ttc tcc tac ccc tac aag gcc gtc ttc agt acc 336
 Pro Asp Gly Gln Gly Phe Ser Tyr Pro Tyr Lys Ala Val Phe Ser Thr
 100 105 110

cag gcc ccc cct tta gcc agc ctg cag gac agc cac ttc ctc act gac 384
 Gln Gly Pro Pro Leu Ala Ser Leu Gln Asp Ser His Phe Leu Thr Asp
 115 120 125

- 19 -

gcc gac atg gtc atg agc ttc gtc aac cta gtg gaa cat gac aaa gaa	432
Ala Asp Met Val Met Ser Phe Val Asn Leu Val Glu His Asp Lys Glu	
130 135 140	
ttc ttc cac cct cga tac cac cat cgg gag ttc cgg ttt gat ctt tcc	480
Phe Phe His Pro Arg Tyr His His Arg Glu Phe Arg Phe Asp Leu Ser	
145 150 155 160	
aag atc ccc gag ggc gaa cgg gtg acc gca gcc gaa ttc agg atc tat	528
Lys Ile Pro Glu Gly Glu Arg Val Thr Ala Ala Glu Phe Arg Ile Tyr	
165 170 175	
aag gac tac atc cgg gag cga ttt gac aac gag acc ttc cag atc aca	576
Lys Asp Tyr Ile Arg Glu Arg Phe Asp Asn Glu Thr Phe Gln Ile Thr	
180 185 190	
gtc tat cag gtg ctc cag gag cac tca ggc agg gag tcg gac ctc ttc	624
Val Tyr Gln Val Leu Gln Glu His Ser Gly Arg Glu Ser Asp Leu Phe	
195 200 205	
ttg ctg gac agc cgc acc atc tgg gct tct gag gag ggc tgg ttg gtg	672
Leu Leu Asp Ser Arg Thr Ile Trp Ala Ser Glu Glu Gly Trp Leu Val	
210 215 220	
ttt gat atc aca gcc acc agc aac cac tgg gtg gtc aac cct cgg cac	720
Phe Asp Ile Thr Ala Thr Ser Asn His Trp Val Val Asn Pro Arg His	
225 230 235 240	
aac ctg ggc tta cag ctc tct gtg gag acc ctg gat ggg cag agc atc	768
Asn Leu Gly Leu Gln Leu Ser Val Glu Thr Leu Asp Gly Gln Ser Ile	
245 250 255	
aac ccc aag ttg gca ggc ctg att gga cgg cat gga ccc cag aac aag	816
Asn Pro Lys Leu Ala Gly Leu Ile Gly Arg His Gly Pro Gln Asn Lys	
260 265 270	
caa ccc ttc atg gtg gcc ttc ttc aag gcc acg gaa gtc cat ctc cgt	864

- 20 -

Gln Pro Phe Met Val Ala Phe Phe Lys Ala Thr Glu Val His Leu Arg	
275	280 285
agt atc cgg tcc acg ggg ggc acg cgc cag gag gag gaa tac atg ccc	912
Ser Ile Arg Ser Thr Gly Gly Thr Arg Gln Glu Glu Glu Tyr Met Pro	
290	295 300
atg gag acg cgt acc cag tcg cag gac gtg tcc cgg ggc tcc ggt tct	960
Met Glu Thr Arg Thr Gln Ser Gln Asp Val Ser Arg Gly Ser Gly Ser	
305	310 315 320
tca gac tac aac ggc agt gag tta aaa aca gct tgc aag aag cat gag	1008
Ser Asp Tyr Asn Gly Ser Glu Leu Lys Thr Ala Cys Lys Lys His Glu	
325	330 335
ctc tat gtg agc ttc cag gac ctg gga tgg cag gac tgg atc att gca	1056
Leu Tyr Val Ser Phe Gln Asp Leu Gly Trp Gln Asp Trp Ile Ile Ala	
340	345 350
ccc aaa ggc tac gct gcc aac tac tgt gat gga gag tgt tcc ttc cca	1104
Pro Lys Gly Tyr Ala Ala Asn Tyr Cys Asp Gly Glu Cys Ser Phe Pro	
355	360 365
ctc aac gca cac atg aat gcc acc aac cac gcc att gta cag acc ttg	1152
Leu Asn Ala His Met Asn Ala Thr Asn His Ala Ile Val Gln Thr Leu	
370	375 380
gtc cac ctt atg aat ccc gag tac gtc ccc aaa cca tgc tgc gca cca	1200
Val His Leu Met Asn Pro Glu Tyr Val Pro Lys Pro Cys Cys Ala Pro	
385	390 395 400
acc aaa ctg aat gcc atc tcg gtt ctt tac ttc gat gat aac tcc aat	1248
Thr Lys Leu Asn Ala Ile Ser Val Leu Tyr Phe Asp Asp Asn Ser Asn	
405	410 415
gtc atc ttg aaa aag tac agg aat atg gtc gtg aga gct tgt ggt tgc	1296
Val Ile Leu Lys Lys Tyr Arg Asn Met Val Val Arg Ala Cys Gly Cys	
420	425 430

- 21 -

cat taagttgaag ctggtgtgtg tgtgtgggtg ggggcatggt tctgccttgg a 1350
His

<210> 8

<211> 433

<212> PRT

<213> mouse

<400> 8

Met His Val Arg Ser Leu Arg Ala Ala Ala Pro His Ser Phe Val Ala

1 5 10 15

Leu Trp Ala Pro Leu Phe Leu Leu Arg Ser Ala Leu Ala Asp Phe Ser

20 25 30

Leu Asp Asn Glu Val His Ser Ser Phe Ile His Arg Arg Leu Arg Ser

35 40 45

Gln Glu Arg Arg Glu Met Gln Arg Glu Ile Leu Ser Ile Leu Gly Leu

50 55 60

Pro His Arg Pro Arg Pro His Leu Gln Gly Lys His Asn Ser Ala Pro

65 70 75 80

Met Phe Met Leu Asp Leu Tyr Asn Ala Met Ala Val Glu Glu Ser Gly

85 90 95

Pro Asp Gly Gln Gly Phe Ser Tyr Pro Tyr Lys Ala Val Phe Ser Thr

100 105 110

Gln Gly Pro Pro Leu Ala Ser Leu Gln Asp Ser His Phe Leu Thr Asp

115 120 125

Ala Asp Met Val Met Ser Phe Val Asn Leu Val Glu His Asp Lys Glu

130 135 140

- 22 -

Phe Phe His Pro Arg Tyr His His Arg Glu Phe Arg Phe Asp Leu Ser
145 150 155 160

Lys Ile Pro Glu Gly Glu Arg Val Thr Ala Ala Glu Phe Arg Ile Tyr
165 170 175

Lys Asp Tyr Ile Arg Glu Arg Phe Asp Asn Glu Thr Phe Gln Ile Thr
180 185 190

Val Tyr Gln Val Leu Gln Glu His Ser Gly Arg Glu Ser Asp Leu Phe
195 200 205

Leu Leu Asp Ser Arg Thr Ile Trp Ala Ser Glu Glu Gly Trp Leu Val
210 215 220

Phe Asp Ile Thr Ala Thr Ser Asn His Trp Val Val Asn Pro Arg His
225 230 235 240

Asn Leu Gly Leu Gln Leu Ser Val Glu Thr Leu Asp Gly Gln Ser Ile
245 250 255

Asn Pro Lys Leu Ala Gly Leu Ile Gly Arg His Gly Pro Gln Asn Lys
260 265 270

Gln Pro Phe Met Val Ala Phe Phe Lys Ala Thr Glu Val His Leu Arg
275 280 285

Ser Ile Arg Ser Thr Gly Gly Thr Arg Gln Glu Glu Tyr Met Pro
290 295 300

Met Glu Thr Arg Thr Gln Ser Gln Asp Val Ser Arg Gly Ser Gly Ser
305 310 315 320

Ser Asp Tyr Asn Gly Ser Glu Leu Lys Thr Ala Cys Lys Lys His Glu
325 330 335

Leu Tyr Val Ser Phe Gln Asp Leu Gly Trp Gln Asp Trp Ile Ile Ala
340 345 350

- 23 -

Pro Lys Gly Tyr Ala Ala Asn Tyr Cys Asp Gly Glu Cys Ser Phe Pro

355

360

365

Leu Asn Ala His Met Asn Ala Thr Asn His Ala Ile Val Gln Thr Leu

370

375

380

Val His Leu Met Asn Pro Glu Tyr Val Pro Lys Pro Cys Cys Ala Pro

385

390

395

400

Thr Lys Leu Asn Ala Ile Ser Val Leu Tyr Phe Asp Asp Asn Ser Asn

405

410

415

Val Ile Leu Lys Lys Tyr Arg Asn Met Val Val Arg Ala Cys Gly Cys

420

425

430

His

<210> 9

<211> 1353

<212> DNA

<213> mouse

<220>

<221> CDS

<222> (1)..(1353)

<400> 9

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Met His Val Arg Ser Leu Arg Ala Ala Ala Pro His Ser Phe Val Ala

1

5

10

15

ctc tgg gcg cct ctg ttc ttg ctg cgc tcc gcc ctg gcc gat ttc agc 96

Leu Trp Ala Pro Leu Phe Leu Leu Arg Ser Ala Leu Ala Asp Phe Ser

20

25

30

ctg gac aac gag gtg cac tcc agc ttc atc cac cgg cgc ctc cgc agc 144

- 24 -

Leu Asp Asn Glu Val His Ser Ser Phe Ile His Arg Arg Leu Arg Ser	
35 40 45	
cag gag cgg cgg gag atg cag cgg gag atc ctg tcc atc tta ggg ttg	192
Gln Glu Arg Arg Glu Met Gln Arg Glu Ile Leu Ser Ile Leu Gly Leu	
50 55 60	
ccc cat cgc ccg cgc ccg cac ctc cag gga aag cat aat tcg gcg ccc	240
Pro His Arg Pro Arg Pro His Leu Gln Gly Lys His Asn Ser Ala Pro	
65 70 75 80	
atg ttc atg ttg gac ctg tac aac gcc atg gcg gtg gag gag agc ggg	288
Met Phe Met Leu Asp Leu Tyr Asn Ala Met Ala Val Glu Glu Ser Gly	
85 90 95	
ccg gac gga cag ggc ttc tcc tac ccc tac aag gcc gtc ttc agt acc	336
Pro Asp Gly Gln Gly Phe Ser Tyr Pro Tyr Lys Ala Val Phe Ser Thr	
100 105 110	
cag ggc ccc cct tta gcc agc ctg cag gac agc cac ttc ctc act gac	384
Gln Gly Pro Pro Leu Ala Ser Leu Gln Asp Ser His Phe Leu Thr Asp	
115 120 125	
gcc gac atg gtc atg agc ttc gtc aac cta gtg gaa cat gac aaa gaa	432
Ala Asp Met Val Met Ser Phe Val Asn Leu Val Glu His Asp Lys Glu	
130 135 140	
ttc ttc cac cct cga tac cac cat cgg gag ttc cgg ttt gat ctt tcc	480
Phe Phe His Pro Arg Tyr His His Arg Glu Phe Arg Phe Asp Leu Ser	
145 150 155 160	
aag atc ccc gag ggc gaa cgg gtg acc gca gcc gaa ttc agg atc tat	528
Lys Ile Pro Glu Gly Glu Arg Val Thr Ala Ala Glu Phe Arg Ile Tyr	
165 170 175	
aag gac tac atc cgg gag cga ttt gac aac gag acc ttc cag atc aca	576
Lys Asp Tyr Ile Arg Glu Arg Phe Asp Asn Glu Thr Phe Gln Ile Thr	
180 185 190	

- 25 -

gtc tat cag gtg ctc cag gag cac tca ggc agg gag tcg gac ctc ttc	624
Val Tyr Gln Val Leu Gln Glu His Ser Gly Arg Glu Ser Asp Leu Phe	
195 200 205	
ttg ctg gac agc cgc acc atc tgg gct tct gag gag ggc tgg ttg gtg	672
Leu Leu Asp Ser Arg Thr Ile Trp Ala Ser Glu Glu Gly Trp Leu Val	
210 215 220	
ttt gat atc aca gcc acc agc aac cac tgg gtg gtc aac cct cgg cac	720
Phe Asp Ile Thr Ala Thr Ser Asn His Trp Val Val Asn Pro Arg His	
225 230 235 240	
aac ctg ggc tta cag ctc tct gtg gag acc ctg gat ggg cag agc atc	768
Asn Leu Gly Leu Gln Leu Ser Val Glu Thr Leu Asp Gly Gln Ser Ile	
245 250 255	
aac ccc aag ttg gca ggc ctg att gga cgg cat gga ccc cag aac aag	816
Asn Pro Lys Leu Ala Gly Leu Ile Gly Arg His Gly Pro Gln Asn Lys	
260 265 270	
caa ccc ttc atg gtg gcc ttc ttc aag gcc acg gaa gtc cat ctc cgt	864
Gln Pro Phe Met Val Ala Phe Phe Lys Ala Thr Glu Val His Leu Arg	
275 280 285	
agt atc cgg tcc acg ggg ggc acg cgc cag gag cag aag ctt atc tcg	912
Ser Ile Arg Ser Thr Gly Gly Thr Arg Gln Glu Gln Lys Leu Ile Ser	
290 295 300	
gag gag gac ctg acg cgt acc cag tcg cag gac gtg tcc cgg ggc tcc	960
Glu Glu Asp Leu Thr Arg Thr Gln Ser Gln Asp Val Ser Arg Gly Ser	
305 310 315 320	
ggg tct tca gac tac aac ggc agt gag tta aaa aca gct tgc aag aag	1008
Gly Ser Ser Asp Tyr Asn Gly Ser Glu Leu Lys Thr Ala Cys Lys Lys	
325 330 335	
cat gag ctc tat gtg agc ttc cag gac ctg gga tgg cag gac tgg atc	1056

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His Glu Leu Tyr Val Ser Phe Gln Asp Leu Gly Trp Gln Asp Trp Ile
 340 345 350

att gca ccc aaa ggc tac gct gcc aac tac tgt gat gga gag tgt tcc 1104
 Ile Ala Pro Lys Gly Tyr Ala Ala Asn Tyr Cys Asp Gly Glu Cys Ser
 355 360 365

ttc cca ctc aac gca cac atg aat gcc acc aac cac gcc att gta cag 1152
 Phe Pro Leu Asn Ala His Met Asn Ala Thr Asn His Ala Ile Val Gln
 370 375 380

acc ttg gtc cac ctt atg aat ccc gag tac gtc ccc aaa cca tgc tgc 1200
 Thr Leu Val His Leu Met Asn Pro Glu Tyr Val Pro Lys Pro Cys Cys
 385 390 395 400

gca cca acc aaa ctg aat gcc atc tcg gtt ctt tac ttc gat gat aac 1248
 Ala Pro Thr Lys Leu Asn Ala Ile Ser Val Leu Tyr Phe Asp Asp Asn
 405 410 415

tcc aat gtc atc ttg aaa aag tac agg aat atg gtc gtg aga gct tgt 1296
 Ser Asn Val Ile Leu Lys Lys Tyr Arg Asn Met Val Val Arg Ala Cys
 420 425 430

ggt tgc cat gtt gaa gct ggt gtg tgt gtg tgg gtg ggg gca tgg ttc 1344
 Gly Cys His Val Glu Ala Gly Val Cys Val Trp Val Gly Ala Trp Phe
 435 440 445

tgc ctt gga 1353
 Cys Leu Gly
 450

<210> 10
 <211> 451
 <212> PRT
 <213> mouse

<400> 10
 Met His Val Arg Ser Leu Arg Ala Ala Ala Pro His Ser Phe Val Ala

- 27 -

1	5	10	15
Leu Trp Ala Pro Leu Phe Leu Leu Arg Ser Ala Leu Ala Asp Phe Ser			
20	25	30	
Leu Asp Asn Glu Val His Ser Ser Phe Ile His Arg Arg Leu Arg Ser			
35	40	45	
Gln Glu Arg Arg Glu Met Gln Arg Glu Ile Leu Ser Ile Leu Gly Leu			
50	55	60	
Pro His Arg Pro Arg Pro His Leu Gln Gly Lys His Asn Ser Ala Pro			
65	70	75	80
Met Phe Met Leu Asp Leu Tyr Asn Ala Met Ala Val Glu Glu Ser Gly			
85	90	95	
Pro Asp Gly Gln Gly Phe Ser Tyr Pro Tyr Lys Ala Val Phe Ser Thr			
100	105	110	
Gln Gly Pro Pro Leu Ala Ser Leu Gln Asp Ser His Phe Leu Thr Asp			
115	120	125	
Ala Asp Met Val Met Ser Phe Val Asn Leu Val Glu His Asp Lys Glu			
130	135	140	
Phe Phe His Pro Arg Tyr His His Arg Glu Phe Arg Phe Asp Leu Ser			
145	150	155	160
Lys Ile Pro Glu Gly Glu Arg Val Thr Ala Ala Glu Phe Arg Ile Tyr			
165	170	175	
Lys Asp Tyr Ile Arg Glu Arg Phe Asp Asn Glu Thr Phe Gln Ile Thr			
180	185	190	
Val Tyr Gln Val Leu Gln Glu His Ser Gly Arg Glu Ser Asp Leu Phe			
195	200	205	

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Leu Leu Asp Ser Arg Thr Ile Trp Ala Ser Glu Glu Gly Trp Leu Val
 210 215 220

Phe Asp Ile Thr Ala Thr Ser Asn His Trp Val Val Asn Pro Arg His
 225 230 235 240

Asn Leu Gly Leu Gln Leu Ser Val Glu Thr Leu Asp Gly Gln Ser Ile
 245 250 255

Asn Pro Lys Leu Ala Gly Leu Ile Gly Arg His Gly Pro Gln Asn Lys
 260 265 270

Gln Pro Phe Met Val Ala Phe Phe Lys Ala Thr Glu Val His Leu Arg
 275 280 285

Ser Ile Arg Ser Thr Gly Gly Thr Arg Gln Glu Gln Lys Leu Ile Ser
 290 295 300

Glu Glu Asp Leu Thr Arg Thr Gln Ser Gln Asp Val Ser Arg Gly Ser
 305 310 315 320

Gly Ser Ser Asp Tyr Asn Gly Ser Glu Leu Lys Thr Ala Cys Lys Lys
 325 330 335

His Glu Leu Tyr Val Ser Phe Gln Asp Leu Gly Trp Gln Asp Trp Ile
 340 345 350

Ile Ala Pro Lys Gly Tyr Ala Ala Asn Tyr Cys Asp Gly Glu Cys Ser
 355 360 365

Phe Pro Leu Asn Ala His Met Asn Ala Thr Asn His Ala Ile Val Gln
 370 375 380

Thr Leu Val His Leu Met Asn Pro Glu Tyr Val Pro Lys Pro Cys Cys
 385 390 395 400

Ala Pro Thr Lys Leu Asn Ala Ile Ser Val Leu Tyr Phe Asp Asp Asn
 405 410 415

- 29 -

Ser Asn Val Ile Leu Lys Lys Tyr Arg Asn Met Val Val Arg Ala Cys
 420 425 430

Gly Cys His Val Glu Ala Gly Val Cys Val Trp Val Gly Ala Trp Phe
 435 440 445

Cys Leu Gly
 450

<210> 11

<211> 1346

<212> DNA

<213> mouse

<220>

<221> CDS

<222> (1)..(1299)

<400> 11

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 Met His Val Arg Ser Leu Arg Ala Ala Ala Pro His Ser Phe Val Ala
 1 5 10 15

ctc tgg gcg cct ctg ttc ttg ctg cgc tcc gcc ctg gcc gat ttc agc 96
 Leu Trp Ala Pro Leu Phe Leu Leu Arg Ser Ala Leu Ala Asp Phe Ser
 20 25 30

ctg gac aac gag gtg cac tcc agc ttc atc cac cgg cgc ctc cgc agc 144
 Leu Asp Asn Glu Val His Ser Ser Phe Ile His Arg Arg Leu Arg Ser
 35 40 45

cag gag cgg cgg gag atg cag cgg gag atc ctg tcc atc tta ggg ttg 192
 Gln Glu Arg Arg Glu Met Gln Arg Glu Ile Leu Ser Ile Leu Gly Leu
 50 55 60

ccc cat cgc ccg cgc ccg cac ctc cag gga aag cat aat tcg gcg ccc 240
 Pro His Arg Pro Arg Pro His Leu Gln Gly Lys His Asn Ser Ala Pro

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65	70	75	80	
atg ttc atg ttg gac ctg tac aac gcc atg gcg gtg gag gag agc ggg				288
Met Phe Met Leu Asp Leu Tyr Asn Ala Met Ala Val Glu Glu Ser Gly				
	85	90	95	
ccg gac gga cag ggc ttc tcc tac ccc tac aag gcc gtc ttc agt acc				336
Pro Asp Gly Gln Gly Phe Ser Tyr Pro Tyr Lys Ala Val Phe Ser Thr				
	100	105	110	
cag ggc ccc cct tta gcc agc ctg cag gac agc cac ttc ctc act gac				384
Gln Gly Pro Pro Leu Ala Ser Leu Gln Asp Ser His Phe Leu Thr Asp				
	115	120	125	
gcc gac atg gtc atg agc ttc gtc aac cta gtg gaa cat gac aaa gaa				432
Ala Asp Met Val Met Ser Phe Val Asn Leu Val Glu His Asp Lys Glu				
	130	135	140	
ttc ttc cac cct cga tac cac cat cgg gag ttc cgg ttt gat ctt tcc				480
Phe Phe His Pro Arg Tyr His His Arg Glu Phe Arg Phe Asp Leu Ser				
	145	150	155	160
aag atc ccc gag ggc gaa cgg gtg acc gca gcc gaa ttc agg atc tat				528
Lys Ile Pro Glu Gly Glu Arg Val Thr Ala Ala Glu Phe Arg Ile Tyr				
	165	170	175	
aag gac tac atc cgg gag cga ttt gac aac gag acc ttc cag atc aca				576
Lys Asp Tyr Ile Arg Glu Arg Phe Asp Asn Glu Thr Phe Gln Ile Thr				
	180	185	190	
gtc tat cag gtg ctc cag gag cac tca ggc agg gag tcg gac ctc ttc				624
Val Tyr Gln Val Leu Gln Glu His Ser Gly Arg Glu Ser Asp Leu Phe				
	195	200	205	
ttg ctg gac agc cgc acc atc tgg gct tct gag gag ggc tgg ttg gtg				672
Leu Leu Asp Ser Arg Thr Ile Trp Ala Ser Glu Glu Gly Trp Leu Val				
	210	215	220	

ttt gat atc aca gcc acc agc aac cac tgg gtg gtc aac cct cgg cac	720
Phe Asp Ile Thr Ala Thr Ser Asn His Trp Val Val Asn Pro Arg His	
225 230 235 240	
aac ctg ggc tta cag ctc tct gtg gag acc ctg gat ggg cag agc atc	768
Asn Leu Gly Leu Gln Leu Ser Val Glu Thr Leu Asp Gly Gln Ser Ile	
245 250 255	
aac ccc aag ttg gca ggc ctg att gga cgg cat gga ccc cag aac aag	816
Asn Pro Lys Leu Ala Gly Leu Ile Gly Arg His Gly Pro Gln Asn Lys	
260 265 270	
caa ccc ttc atg gtg gcc ttc ttc aag gcc acg gaa gtc cat ctc cgt	864
Gln Pro Phe Met Val Ala Phe Phe Lys Ala Thr Glu Val His Leu Arg	
275 280 285	
agt atc cgg tcc acg ggg ggc acg cgc cag gag gag gaa tac atg ccc	912
Ser Ile Arg Ser Thr Gly Gly Thr Arg Gln Glu Glu Glu Tyr Met Pro	
290 295 300	
atg gag acg cgt cca aag aac caa gag gcc ctg agg atg gcc agt gtg	960
Met Glu Thr Arg Pro Lys Asn Gln Glu Ala Leu Arg Met Ala Ser Val	
305 310 315 320	
gca gaa aac agc agc agt gac cag agg cag gcc tgc aag aaa cat gag	1008
Ala Glu Asn Ser Ser Ser Asp Gln Arg Gln Ala Cys Lys Lys His Glu	
325 330 335	
ctg tac gtc agc ttc cga gac ctt ggc tgg cag gac tgg atc att gca	1056
Leu Tyr Val Ser Phe Arg Asp Leu Gly Trp Gln Asp Trp Ile Ile Ala	
340 345 350	
cct gaa ggc tat gct gcc tac tac tgt gag gga gag tgc gcc ttc cct	1104
Pro Glu Gly Tyr Ala Ala Tyr Tyr Cys Glu Gly Glu Cys Ala Phe Pro	
355 360 365	
ctg aac tcc tac atg aac gcc acc aac cac gcc atc gtc cag aca ctg	1152
Leu Asn Ser Tyr Met Asn Ala Thr Asn His Ala Ile Val Gln Thr Leu	

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370 375 380
 gtt cac ttc atc aac cca gac aca gta ccc aag ccc tgc tgt gcg ccc 1200
 Val His Phe Ile Asn Pro Asp Thr Val Pro Lys Pro Cys Cys Ala Pro
 385 390 395 400
 acc cag ctc aac gcc atc tct gtc ctc tac ttc gac gac agc tct aat 1248
 Thr Gln Leu Asn Ala Ile Ser Val Leu Tyr Phe Asp Asp Ser Ser Asn
 405 410 415
 gtc atc ctg aag aag tac aga aac atg gtg gtc cgg gcc tgt ggc tgc 1296
 Val Ile Leu Lys Lys Tyr Arg Asn Met Val Val Arg Ala Cys Gly Cys
 420 425 430
 cac tagctcttcc tgagaccctg acctttgcgg ggccacacct ttccaaa 1346
 His
 <210> 12
 <211> 433
 <212> PRT
 <213> mouse
 <400> 12
 Met His Val Arg Ser Leu Arg Ala Ala Ala Pro His Ser Phe Val Ala
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 Leu Trp Ala Pro Leu Phe Leu Leu Arg Ser Ala Leu Ala Asp Phe Ser
 20 25 30
 Leu Asp Asn Glu Val His Ser Ser Phe Ile His Arg Arg Leu Arg Ser
 35 40 45
 Gln Glu Arg Arg Glu Met Gln Arg Glu Ile Leu Ser Ile Leu Gly Leu
 50 55 60
 Pro His Arg Pro Arg Pro His Leu Gln Gly Lys His Asn Ser Ala Pro
 65 70 75 80

- 33 -

Met Phe Met Leu Asp Leu Tyr Asn Ala Met Ala Val Glu Glu Ser Gly

85

90

95

Pro Asp Gly Gln Gly Phe Ser Tyr Pro Tyr Lys Ala Val Phe Ser Thr

100

105

110

Gln Gly Pro Pro Leu Ala Ser Leu Gln Asp Ser His Phe Leu Thr Asp

115

120

125

Ala Asp Met Val Met Ser Phe Val Asn Leu Val Glu His Asp Lys Glu

130

135

140

Phe Phe His Pro Arg Tyr His His Arg Glu Phe Arg Phe Asp Leu Ser

145

150

155

160

Lys Ile Pro Glu Gly Glu Arg Val Thr Ala Ala Glu Phe Arg Ile Tyr

165

170

175

Lys Asp Tyr Ile Arg Glu Arg Phe Asp Asn Glu Thr Phe Gln Ile Thr

180

185

190

Val Tyr Gln Val Leu Gln Glu His Ser Gly Arg Glu Ser Asp Leu Phe

195

200

205

Leu Leu Asp Ser Arg Thr Ile Trp Ala Ser Glu Glu Gly Trp Leu Val

210

215

220

Phe Asp Ile Thr Ala Thr Ser Asn His Trp Val Val Asn Pro Arg His

225

230

235

240

Asn Leu Gly Leu Gln Leu Ser Val Glu Thr Leu Asp Gly Gln Ser Ile

245

250

255

Asn Pro Lys Leu Ala Gly Leu Ile Gly Arg His Gly Pro Gln Asn Lys

260

265

270

Gln Pro Phe Met Val Ala Phe Phe Lys Ala Thr Glu Val His Leu Arg

- 34 -

275 280 285
 Ser Ile Arg Ser Thr Gly Gly Thr Arg Gln Glu Glu Glu Tyr Met Pro
 290 295 300
 Met Glu Thr Arg Pro Lys Asn Gln Glu Ala Leu Arg Met Ala Ser Val
 305 310 315 320
 Ala Glu Asn Ser Ser Ser Asp Gln Arg Gln Ala Cys Lys Lys His Glu
 325 330 335
 Leu Tyr Val Ser Phe Arg Asp Leu Gly Trp Gln Asp Trp Ile Ile Ala
 340 345 350
 Pro Glu Gly Tyr Ala Ala Tyr Tyr Cys Glu Gly Glu Cys Ala Phe Pro
 355 360 365
 Leu Asn Ser Tyr Met Asn Ala Thr Asn His Ala Ile Val Gln Thr Leu
 370 375 380
 Val His Phe Ile Asn Pro Asp Thr Val Pro Lys Pro Cys Cys Ala Pro
 385 390 395 400
 Thr Gln Leu Asn Ala Ile Ser Val Leu Tyr Phe Asp Asp Ser Ser Asn
 405 410 415
 Val Ile Leu Lys Lys Tyr Arg Asn Met Val Val Arg Ala Cys Gly Cys
 420 425 430
 His

<210> 13
 <211> 1352
 <212> DNA
 <213> mouse

- 35 -

<220>

<221> CDS

<222> (1)..(1305)

<400> 13

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ctc tgg gcg cct ctg ttc ttg ctg cgc tcc gcc ctg gcc gat ttc agc	96
Leu Trp Ala Pro Leu Phe Leu Leu Arg Ser Ala Leu Ala Asp Phe Ser	
20 25 30	
ctg gac aac gag gtg cac tcc agc ttc atc cac cgg cgc ctc cgc agc	144
Leu Asp Asn Glu Val His Ser Ser Phe Ile His Arg Arg Leu Arg Ser	
35 40 45	
cag gag cgg cgg gag atg cag cgg gag atc ctg tcc atc tta ggg ttg	192
Gln Glu Arg Arg Glu Met Gln Arg Glu Ile Leu Ser Ile Leu Gly Leu	
50 55 60	
ccc cat cgc ccg cgc ccg cac ctc cag gga aag cat aat tcg gcg ccc	240
Pro His Arg Pro Arg Pro His Leu Gln Gly Lys His Asn Ser Ala Pro	
65 70 75 80	
atg ttc atg ttg gac ctg tac aac gcc atg gcg gtg gag gag agc ggg	288
Met Phe Met Leu Asp Leu Tyr Asn Ala Met Ala Val Glu Glu Ser Gly	
85 90 95	
ccg gac gga cag ggc ttc tcc tac ccc tac aag gcc gtc ttc agt acc	336
Pro Asp Gly Gln Gly Phe Ser Tyr Pro Tyr Lys Ala Val Phe Ser Thr	
100 105 110	
cag ggc ccc cct tta gcc agc ctg cag gac agc cac ttc ctc act gac	384
Gln Gly Pro Pro Leu Ala Ser Leu Gln Asp Ser His Phe Leu Thr Asp	
115 120 125	
gcc gac atg gtc atg agc ttc gtc aac cta gtg gaa cat gac aaa gaa	432

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Ala Asp Met Val Met Ser Phe Val Asn Leu Val Glu His Asp Lys Glu	
130	135 140
ttc ttc cac cct cga tac cac cat cgg gag ttc cgg ttt gat ctt tcc	480
Phe Phe His Pro Arg Tyr His His Arg Glu Phe Arg Phe Asp Leu Ser	
145	150 155 160
aag atc ccc gag ggc gaa cgg gtg acc gca gcc gaa ttc agg atc tat	528
Lys Ile Pro Glu Gly Glu Arg Val Thr Ala Ala Glu Phe Arg Ile Tyr	
	165 170 175
aag gac tac atc cgg gag cga ttt gac aac gag acc ttc cag atc aca	576
Lys Asp Tyr Ile Arg Glu Arg Phe Asp Asn Glu Thr Phe Gln Ile Thr	
	180 185 190
gtc tat cag gtg ctc cag gag cac tca ggc agg gag tcg gac ctc ttc	624
Val Tyr Gln Val Leu Gln Glu His Ser Gly Arg Glu Ser Asp Leu Phe	
	195 200 205
ttg ctg gac agc cgc acc atc tgg gct tct gag gag ggc tgg ttg gtg	672
Leu Leu Asp Ser Arg Thr Ile Trp Ala Ser Glu Glu Gly Trp Leu Val	
	210 215 220
ttt gat atc aca gcc acc agc aac cac tgg gtg gtc aac cct cgg cac	720
Phe Asp Ile Thr Ala Thr Ser Asn His Trp Val Val Asn Pro Arg His	
225	230 235 240
aac ctg ggc tta cag ctc tct gtg gag acc ctg gat ggg cag agc atc	768
Asn Leu Gly Leu Gln Leu Ser Val Glu Thr Leu Asp Gly Gln Ser Ile	
	245 250 255
aac ccc aag ttg gca ggc ctg att gga cgg cat gga ccc cag aac aag	816
Asn Pro Lys Leu Ala Gly Leu Ile Gly Arg His Gly Pro Gln Asn Lys	
	260 265 270
caa ccc ttc atg gtg gcc ttc ttc aag gcc acg gaa gtc cat ctc cgt	864
Gln Pro Phe Met Val Ala Phe Phe Lys Ala Thr Glu Val His Leu Arg	
	275 280 285

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agt atc cgg tcc acg ggg ggc acg cgc cag gag cag aag ctt atc tog	912
Ser Ile Arg Ser Thr Gly Gly Thr Arg Gln Glu Gln Lys Leu Ile Ser	
290 295 300	
 gag gag gac ctg acg cgt cca aag aac caa gag gcc ctg agg atg gcc	960
Glu Glu Asp Leu Thr Arg Pro Lys Asn Gln Glu Ala Leu Arg Met Ala	
305 310 315 320	
 agt gtg gca gaa aac agc agc agt gac cag agg cag gcc tgc aag aaa	1008
Ser Val Ala Glu Asn Ser Ser Ser Asp Gln Arg Gln Ala Cys Lys Lys	
325 330 335	
 cat gag ctg tac gtc agc ttc cga gac ctt ggc tgg cag gac tgg atc	1056
His Glu Leu Tyr Val Ser Phe Arg Asp Leu Gly Trp Gln Asp Trp Ile	
340 345 350	
 att gca cct gaa ggc tat gct gcc tac tac tgt gag gga gag tgc gcc	1104
Ile Ala Pro Glu Gly Tyr Ala Ala Tyr Tyr Cys Glu Gly Glu Cys Ala	
355 360 365	
 ttc cct ctg aac tcc tac atg aac gcc acc aac cac gcc atc gtc cag	1152
Phe Pro Leu Asn Ser Tyr Met Asn Ala Thr Asn His Ala Ile Val Gln	
370 375 380	
 aca ctg gtt cac ttc atc aac cca gac aca gta ccc aag ccc tgc tgt	1200
Thr Leu Val His Phe Ile Asn Pro Asp Thr Val Pro Lys Pro Cys Cys	
385 390 395 400	
 gcg ccc acc cag ctc aac gcc atc tct gtc ctc tac ttc gac gac agc	1248
Ala Pro Thr Gln Leu Asn Ala Ile Ser Val Leu Tyr Phe Asp Asp Ser	
405 410 415	
 tct aat gtc atc ctg aag aag tac aga aac atg gtg gtc cgg gcc tgt	1296
Ser Asn Val Ile Leu Lys Lys Tyr Arg Asn Met Val Val Arg Ala Cys	
420 425 430	
 ggc tgc cac tagctcttcc tgagaccctg acctttgcgg ggccacacct ttccaaa	1352

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Gly Cys His

435

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Met His Val Arg Ser Leu Arg Ala Ala Ala Pro His Ser Phe Val Ala

1

5

10

15

Leu Trp Ala Pro Leu Phe Leu Leu Arg Ser Ala Leu Ala Asp Phe Ser

20

25

30

Leu Asp Asn Glu Val His Ser Ser Phe Ile His Arg Arg Leu Arg Ser

35

40

45

Gln Glu Arg Arg Glu Met Gln Arg Glu Ile Leu Ser Ile Leu Gly Leu

50

55

60

Pro His Arg Pro Arg Pro His Leu Gln Gly Lys His Asn Ser Ala Pro

65

70

75

80

Met Phe Met Leu Asp Leu Tyr Asn Ala Met Ala Val Glu Glu Ser Gly

85

90

95

Pro Asp Gly Gln Gly Phe Ser Tyr Pro Tyr Lys Ala Val Phe Ser Thr

100

105

110

Gln Gly Pro Pro Leu Ala Ser Leu Gln Asp Ser His Phe Leu Thr Asp

115

120

125

Ala Asp Met Val Met Ser Phe Val Asn Leu Val Glu His Asp Lys Glu

130

135

140

Phe Phe His Pro Arg Tyr His His Arg Glu Phe Arg Phe Asp Leu Ser

145

150

155

160

- 39 -

Lys Ile Pro Glu Gly Glu Arg Val Thr Ala Ala Glu Phe Arg Ile Tyr

165

170

175

Lys Asp Tyr Ile Arg Glu Arg Phe Asp Asn Glu Thr Phe Gln Ile Thr

180

185

190

Val Tyr Gln Val Leu Gln Glu His Ser Gly Arg Glu Ser Asp Leu Phe

195

200

205

Leu Leu Asp Ser Arg Thr Ile Trp Ala Ser Glu Glu Gly Trp Leu Val

210

215

220

Phe Asp Ile Thr Ala Thr Ser Asn His Trp Val Val Asn Pro Arg His

225

230

235

240

Asn Leu Gly Leu Gln Leu Ser Val Glu Thr Leu Asp Gly Gln Ser Ile

245

250

255

Asn Pro Lys Leu Ala Gly Leu Ile Gly Arg His Gly Pro Gln Asn Lys

260

265

270

Gln Pro Phe Met Val Ala Phe Phe Lys Ala Thr Glu Val His Leu Arg

275

280

285

Ser Ile Arg Ser Thr Gly Gly Thr Arg Gln Glu Gln Lys Leu Ile Ser

290

295

300

Glu Glu Asp Leu Thr Arg Pro Lys Asn Gln Glu Ala Leu Arg Met Ala

305

310

315

320

Ser Val Ala Glu Asn Ser Ser Ser Asp Gln Arg Gln Ala Cys Lys Lys

325

330

335

His Glu Leu Tyr Val Ser Phe Arg Asp Leu Gly Trp Gln Asp Trp Ile

340

345

350

Ile Ala Pro Glu Gly Tyr Ala Ala Tyr Tyr Cys Glu Gly Glu Cys Ala

- 40 -

355

360

365

Phe Pro Leu Asn Ser Tyr Met Asn Ala Thr Asn His Ala Ile Val Gln
 370 375 380

Thr Leu Val His Phe Ile Asn Pro Asp Thr Val Pro Lys Pro Cys Cys
 385 390 395 400

Ala Pro Thr Gln Leu Asn Ala Ile Ser Val Leu Tyr Phe Asp Asp Ser
 405 410 415

Ser Asn Val Ile Leu Lys Lys Tyr Arg Asn Met Val Val Arg Ala Cys
 420 425 430

Gly Cys His
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24